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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,863	06/05/2006	Sumihide Yanase	1417-526	1936

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EXAMINER	
BUIE, NICOLE M	
ART UNIT	**PAPER NUMBER**
1796	

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06/25/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,863	YANASE ET AL.	
	Examiner	Art Unit	
	NICOLE M. BUIE	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/03/2009 has been entered.

Response to Amendment

The amendment filed 06/03/2009 has been entered. Claims 1-4 and 6-8 remain pending in the application.

Response to Arguments

Applicant's arguments filed 06/03/2009 have been fully considered but they are not persuasive. The following comments apply:

A) Applicants' argument that the problems to which they are directed and the means by which those problems are solved in the Nakamuru references (P4) is not persuasive. Both Nakamuru references are concerned with a resin composition for a sliding member having excellent friction and wear characteristics. Therefore, it would have been obvious to one of ordinary skill in the art to combine both Nakamuru references.

B) Applicants' assertion that lead and lead alloys were not used (P4) is not persuasive. Since Nakamuru et al. (US '322) teaches that tin may be used, lead is optional (Abstract, C2/L16-24). Therefore, the claimed limitations are met.

C) Applicants' showing of unexpected results (P5) is not persuasive. In Comparative Examples 3, 4, and 5 the experimental conditions differ that is not possible to obtain objective evaluation of the said examples. It is difficult whether the amount of PTFE or the fillers contribute to the results of wear resistance. Additionally, Nakamuru et al. (US '406) teaches that the combination of phosphate and barium sulfate exhibit an effect of enhancing the lubricating film-forming property of the PTFE resin to the sliding surface (C3/L55-C4/L4). Also, the instant claims recite a different phosphate salt than what is used in the comparative examples.

D) Applicants' argument that Nakamuru et al. (US '322) teaches away from using inorganic fibers (P5) is not persuasive. Although Nakamuru et al. (US '322) teaches that in the prior art fillers contributes to wear resistance (C1/L49-56), Nakamuru et al. (US '322) teaches graphite, carbon black, and molybdenum disulfide in different embodiments (C2/L25-54). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971).

E) Applicants' argument that in Nakamuru (US '406) the fillers bring about a problem of worsening the low frictional properties inherent to the PTFE resin unless sufficient care is taken

for the blending amount (P6) is not persuasive. Since Nakamuru (US '406) teaches the amount of glass fiber in which can be used without worsening the low frictional properties inherent to the PTFE resin (C3/L46-54), it would be obvious to one of ordinary skill in the art to use the teachings of Nakamuru (US '406) to choose the amount of glass fiber.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamuru et al. (US 5,732,322) in view of Nakamuru et al. (US 5,616,406) and Hirai (US 6,057,393).

Regarding claim 1, Nakamuru et al. (US '322) discloses a resin composition for sliding member (Abstract, C1/L5-8), comprising 1 to 25% of component A selected from the group consisting of phosphates and barium sulfate (Abstract, C2/L15-24), which overlaps with the

claimed range of 6 to 45%. Nakamura et al. further discloses 1 to 15% magnesium silicate and the balance of a tetrafluoroethylene resin (Abstract, C2/L15-24).

However, Nakamura does not disclose phosphate and barium sulfate together. Nakamuru et al. (US '406) teaches phosphate and barium sulfate are blended with the PTFE resin in a sliding resin composition (C3/L55-C4/L4). Nakamuru et al. (US '322) and Nakamuru et al. (US '406) are analogous art concerned with the same field of endeavor, namely sliding member and resin compositions with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to use both phosphate and barium sulfate of Nakamuru et al. (US '322) as taught by Nakamuru et al. (US '406), and the motivation to do so would have been as Nakamuru et al. (US '406) suggests when the phosphate and barium sulfate are blended with the PTFE resin, the phosphate and barium sulfate exhibit an effect of enhancing the lubricating film-forming property of the PTFE resin to the sliding surface (C3/L55-C4/L4).

However, Nakamuru et al. (US '322) does not disclose metal salt of metaphosphoric acid. Hirai teaches metal salts of metaphosphoric acid in resin composition for a sliding member (C4/L1-8). Nakamuru et al. (US '322) and Hirai are analogous art concerned with the same field of endeavor, namely resin compositions for sliding members with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the phosphate of Nakamuru et al. (US '322) with the metal salts of metaphosphoric acid of Hirai, and the motivation to do so would have been metal salts of secondary phosphates, pyrophosphates, and metaphosphates are equivalent and when blended with PTFE provide further improvement of friction and wear characteristics (C4/L1-12).

Regarding the concentrations of phosphate and barium sulfate of said claim, the specific concentrations of phosphate and barium sulfate is not considered to confer patentability to the claims. As the formation amount of lubricating film is variable that can be modified by adjusting said concentrations of phosphate and barium sulfate, the precise concentrations of phosphate and barium sulfate would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the concentrations of phosphate and barium sulfate to obtain desired formation amount of lubricating film (*In re Boesch*, 617 F .2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Regarding claim 2, Nakamura et al. (US '322) discloses a composition as shown above in claim 1. Nakamura et al. (US '322) further discloses a resin composition comprising either 0.1 to 5% of molybdenum disulfide or 0.1 to 4% graphite (C5/L64-C6/L14), which are both solid lubricants as taught by Nakamura et al. (US '406) (C4/L25-28). Nakamura et al. (US '406) also teaches a resin composition for a sliding member (Abstract, C2/L20-31). The amount of said solid lubricants substantially overlap the claimed range of 0.1 to 2%.

Regarding claim 3, Nakamuru et al. (US '322) Nakamura et al. (US '322) does disclose fillers may be added, including molybdenum disulfide, graphite, and carbon black wherein the amounts are no more than 5% by weight (C5/L64-C6/L7).

Regarding claim 4, Nakamuru et al. (US '322) does not disclose potassium titanate powder, potassium titanate fibers, wollastonite, alumina, silicon carbide, or iron oxide.

Additionally, Nakamuru et al. (US '406) teaches the phosphate and barium sulfate are blended simultaneously with the PTFE resin and wollastonite as the reinforcing fillers at 5 to 30% by weight (C3/L47-54, C3/L55-C4/L4). It would have been obvious to one of ordinary skill in the art at the time of invention to add wollastonite of Nakamuru et al. (US '406) in a composition of Nakamuru et al. (US '322), and the motivation to do so would have been as Nakamuru et al. (US '406) suggests the wollastonite reinforces the resin composition and the effect of forming a lubricating film of the PTFE resin on the surface of the wollastonite in a resin composition during sliding movement of the sliding member, prevents direct contact between the wollastonite and the sliding member (C3/L55-C4/L4).

Regarding claim 6, Nakamura et al. discloses a sliding member comprising a steel black plate and a porous sintered metal layer formed on the steel back plate (C6/L18-21), wherein pores and surface of the porous sintered metal layer are respectively filled and coated with the resin composition for sliding member (C7/L10-42).

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 5,732,322) in view of Nakamura et al. (US 5,616,406) and Kato et al. (US 5,906,967) and Hirai (US 6,057,393).

Regarding claim 7, Nakamura et al. (US '322) discloses a resin composition for sliding member (Abstract, C1/L5-8), comprising 1 to 25% of component A selected from the group consisting of phosphates and barium sulfate (Abstract, C2/L15-24), which substantially overlaps with the claimed range of 6 to 45%. Nakamura et al. further discloses 1 to 15% magnesium silicate and the balance of a tetrafluoroethylene resin (Abstract, C2/L15-24).

However, Nakamura does not disclose phosphate and barium sulfate together. Nakamuru et al. (US '406) teaches phosphate and barium sulfate are blended with the PTFE resin in a sliding resin composition (C3/L55-C4/L4). Nakamuru et al. (US '322) and Nakamuru et al. (US '406) are analogous art concerned with the same field of endeavor, namely sliding member and resin compositions with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to use both phosphate and barium sulfate of Nakamuru et al. (US '322) as taught by Nakamuru et al. (US '406), and the motivation to do so would have been as Nakamuru et al. (US '406) suggests when the phosphate and barium sulfate are blended with the PTFE resin, the phosphate and barium sulfate exhibit an effect of enhancing the lubricating film-forming property of the PTFE resin to the sliding surface (C3/L55-C4/L4).

However, Nakamuru et al. (US '322) does not disclose metal salt of metaphosphoric acid. Hirai teaches metal salts of metaphosphoric acid in resin composition for a sliding member (C4/L1-8). Nakamuru et al. (US '322) and Hirai are analogous art concerned with the same field of endeavor, namely resin compositions for sliding members with comparable amounts of polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the phosphate of Nakamuru et al. (US '322) with the metal salts of metaphosphoric acid of Hirai, and the motivation to do so would have been metal salts of secondary phosphates, pyrophosphates, and metaphosphates are equivalent and when blended with PTFE provide further improvement of friction and wear characteristics (C4/L1-12).

Regarding the concentrations of phosphate and barium sulfate of said claim, the specific concentrations of phosphate and barium sulfate is not considered to confer patentability to the

claims. As the formation amount of lubricating film is variable that can be modified by adjusting said concentrations of phosphate and barium sulfate, the precise concentrations of phosphate and barium sulfate would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the concentrations of phosphate and barium sulfate to obtain desired formation amount of lubricating film (*In re Boesch*, 617 F .2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

However, Nakamura et al. (US '322) does not disclose low-molecular weight tetrafluoroethylene. Kato et al. further discloses low molecular weight PTFE (C4/L66-C5/L16). Nakamura et al. (US '322) and Kato et al. are analogous art concerned with the same field of endeavor, namely sliding members comprising polytetrafluoroethylene. It would have been obvious to one of ordinary skill in the art at the time of invention to add the low-molecular weight tetrafluoroethylene of Kato et al. in a composition of Nakamura et al. (US '322), and the motivation to do so would have been to improve melt flow.

Regarding the amount of low-molecular weight tetrafluoroethylene, the specific amount of low-molecular weight tetrafluoroethylene is not considered to confer patentability to the claims. As the viscous flow is variable that can be modified by adjusting said amount of low-molecular weight, the precise amount of low-molecular weight tetrafluoroethylene would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Accordingly, one of ordinary skill in the art at the time the invention was

made would have optimized, by routine experimentation, the amount of low-molecular weight tetrafluoroethylene to obtain desired melt flow (*In re Boesch*, 617 F .2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Regarding claim 8, Nakamura et al. discloses all the claim limitations as set forth above. Nakamura et al. further discloses a sliding member comprising a steel black plate and a porous sintered metal layer formed on the steel back plate (C6/L18-21), wherein pores and surface of the porous sintered metal layer are respectively filled and coated with the resin composition for sliding member (C7/L10-42).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE M. BUIE whose telephone number is (571)270-3879. The examiner can normally be reached on Monday-Thursday with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/
Supervisory Patent Examiner, Art Unit 1796

/N. M. B./
Examiner, Art Unit 1796
6/15/2009